

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor, Municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards (WQS) of 9 VAC 25-260. The proposed discharge will result from the operation of a sewage treatment plant (SIC Code: 4952 - Sewerage Systems). This permit action consists of reissuing the permit with revisions to the permit, as needed, due to changes in applicable laws, guidance, and available technical information.

1. Facility Name and Address:
Natural Bridge of Virginia
PO Box 57
Natural Bridge, VA 24578
Location: 6477 South Lee Highway, Natural Bridge
2. Permit No. VA0024101; Expiration Date: June 30, 2012
3. Owner: Natural Bridge of Virginia
Contact Name: Debbie Land
Title: General Manager
Telephone No: 540.291.2121
4. Description of Treatment Works Treating Domestic Sewage:
Total Number of Outfalls – 1

The treatment facility serves the wastewater from a hotel, homes and cabins, restaurant, and transient visitors to the Natural Bridge of Virginia. The treatment facility consists of the following units: bar screen/comminutor, parshall flume, aeration tanks, clarifiers, chlorine tank, dechlorination, cascade aeration, anaerobic sludge holding and a sludge drying bed, as shown in the schematics included in the permit reissuance application.

Average Discharge Flow (March 2011– February 2012) = 0.011 MGD
Permitted Flow Tier = 0.040 MGD
Design Flow = 0.099 MGD

5. Application Complete Date: March 10, 2011

Permit Writer: Kate B. Harrigan	Date: April 25, 2012
Reviewed By: Dawn Jeffries	Date: April 30, 2012

Public Comment Period: May 16, 2012 to June 15, 2012

6. Receiving Stream Name: Cedar Creek
River Mile: Outfall 001: 1.91
Use Impairment: Yes
Special Standards: None
Tidal Waters: No
Watershed Name: VAV – I28R James River/Elk Creek/Cedar Creek
Basin: Potomac; Subbasin: James (Upper)
Section: 12; Class: IV
7. Operator License Requirements per 9 VAC 25-31-200.C: Class III
8. Reliability Class per 9 VAC 25-790: Class II (assigned April 5, 1982)

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9. Permit Characterization:

- ☒ Private ☐ Federal ☐ State ☐ POTW ☐ PVOTW
☐ Possible Interstate Effect ☐ Interim Limits in Other Document (attach copy of CSO)

10. Discharge Location Description and Receiving Waters Information: Appendix A

11. Antidegradation (AD) Review & Comments per 9 VAC 25-260-30:

Tier Designation: Cedar Creek: Tier 2

The State Water Control Board's WQS include an AD policy. All state surface waters are provided one of three levels of AD protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 waters have water quality that is better than the WQS. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 waters are exceptional waters and are so designated by regulatory amendment. The AD policy prohibits new or expanded discharges into exceptional waters.

Cedar Creek in the immediate vicinity of Outfall 001 is Tier 2 water because there is no other data available that indicate water quality criteria either have been violated or are barely met. Since the quality of Tier 2 waters is better than required by the standards, no significant degradation of the existing quality will be allowed.

Because there was no proposed expansion for this existing discharge, antidegradation baselines were not calculated for any toxic parameter. If the permit action had included an expansion of the design capacity for this facility, the baselines would have been calculated for all toxic parameters as not more than 25% of the unused assimilative capacity of the criteria for the protection of aquatic life (acute and chronic) and not more than 10% for the protection of human health. The unused assimilative capacity is defined as the difference between existing water quality and the criterion for a specific pollutant.

12. Site Inspection: Performed by Noel Thomas on July 11, 2011

13. Effluent Screening and Effluent Limitations: Appendix B

14. Effluent toxicity testing requirements included per 9 VAC 25-31-220.D: ☐ Yes ☒ No

If "No," check one:

- ☒ Municipal: This facility does not have a design flow ≥ 1.0 MGD, has no Significant Industrial Users (SIUs) or Categorical Industrial Users (CIUs), and is not deemed to have the potential to cause or contribute to instream toxicity.
- ☐ Industrial: This facility's SIC Code(s) and activities contributing wastewater do not fall within the categories for which aquatic toxicity monitoring is required, the facility does not have an IWC = 33%, and the discharge is not deemed to have the potential to cause or contribute to instream toxicity.

15. Sewage sludge utilization and disposal options include the following: Sludge is hauled to the Lexington-Rockbridge Regional WQCF for disposal. The facility's Sludge Management Plan (SMP) was reapproved at this reissuance.

16. Bases for Special Conditions: Appendix C

17. Material Storage per 9 VAC 25-31-280.B.2: This permit requires that the facility's O&M Manual include information to address the management of wastes, fluids, and pollutants which may be present at the facility, to avoid unauthorized discharge of such materials.

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18. Antibacksliding Review per 9 VAC 25-31-220.L: This permit complies with the antibacksliding provisions of the VPDES Permit Regulation.
19. Impaired Use Status Evaluation per 9 VAC 25-31-220.D: Cedar Creek in the vicinity of the discharge is listed as impaired for bacteria. Development of a TMDL for Cedar Creek is scheduled for 2014. This facility will be included in that TMDL. The permit contains a re-opener condition that may allow the permit limits to be modified, in compliance with section 303(d)(4) of the Act once a TMDL is approved.
20. Regulation of Users per 9 VAC 25-31-280.B.9: N/A - There are no industrial users associated with this facility.
21. Storm Water Management per 9 VAC 25-31-120: Application Required? ☐Yes ☒No
If "No," check one:
 - ☒ STPs: This facility does not have a design flow ≥ 1.0 MGD, nor is it required to have an approved POTW pretreatment program under 9 VAC 25-31-10 et seq.
 - ☐ Others: This facility's SIC Code(s) and activities do not fall within the categories for which a Storm Water Application submittal is required.
22. Compliance Schedule per 9 VAC 25-31-250: There are no compliance schedules included in the reissued permit.
23. Variances/Alternative Limits or Conditions per 9 VAC 25-31-280.B, 100.J, 100.P, and 100.M: The applicant requested a waiver for sampling fecal coliform and temperature data because chlorination is utilized for disinfection and the facility does not use any process that heats or cools the wastewater. The requested waivers were deemed appropriate and accepted.
24. Financial Assurance Applicability per 9 VAC 25-650-10: N/A – This design flow of this facility is greater than or equal to 0.040 MGD.
25. Virginia Environmental Excellence Program (VEEP) Evaluation per § 10.1-1187.1-7: At the time of this reissuance, is this facility considered by DEQ to be a participant in the Virginia Environmental Excellence Program in good standing at either the Exemplary Environmental Enterprise (E3) level or the Extraordinary Environmental Enterprise (E4) level? ☐ Yes ☒ No
26. Nutrient Trading Regulation per 9 VAC 25-820: See Appendix B
General Permit Required: ☐ Yes ☒ No
27. Threatened and Endangered (T&E) Species Screening per 9 VAC 25-260-20 B.8: Because this is not an issuance or reissuance that allows increased discharge flows, T&E screening is not automatically required. However, in accordance with the VPDES Memorandum of Understanding, T&E screening was coordinated on April 30, 2012 through DCR & DGIF based upon request. Comments were received from DCR on May 23, 2012 and from DGIF June 7, 2012 and are included in the permit processing file. Comments were considered in the drafting of the permit and were also forwarded to the permittee.

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28. Public Notice Information per 9 VAC 25-31-280.B: All pertinent information is on file, and may be inspected and copied by contacting Kate Harrigan at: DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801, Telephone No. (540) 574-7850, kathleen.harrigan@deq.virginia.gov.

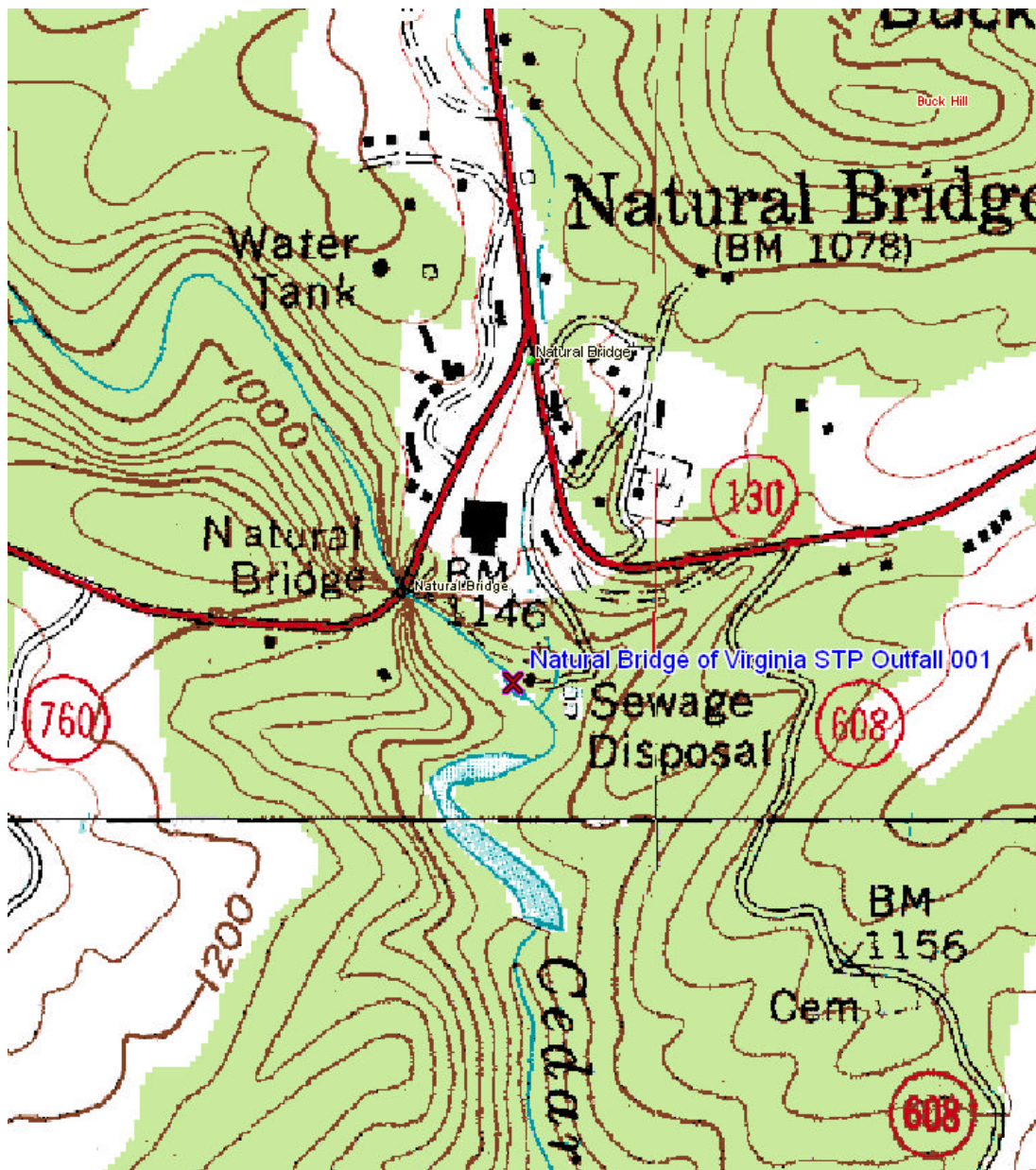
Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

29. Historical Record: A CTO for the operation of the sewage treatment facility was issued on September 17, 1979. The O&M Manual was approved November 16, 1992.

APPENDIX A

DISCHARGE LOCATION AND RECEIVING WATERS INFORMATION

Natural Bridge of Virginia discharges to Cedar Creek in Rockbridge County. The topographical map below shows the location of the treatment facility and Outfall 001.



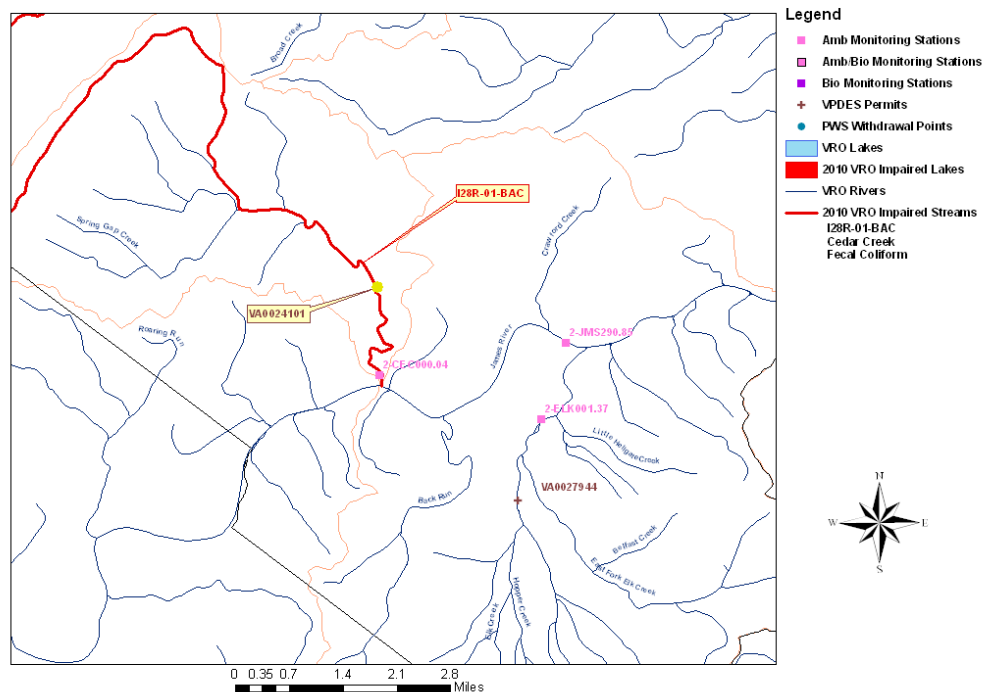
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PLANNING INFORMATION

Relevant points of interest within the watershed and in the vicinity of the discharge are shown on the Water Quality Assessment TMDL Review table and corresponding map below.

WATER QUALITY ASSESSMENTS REVIEW						
UPPER JAMES RIVER BASIN						
4/18/2012						
IMPAIRED SEGMENTS						
SEGMENT ID	STREAM	SEGMENT START	SEGMENT END	SEGMENT LENGTH	PARAMETER	
I28R-01-BAC	Cedar Creek	11.49	0.00	11.49	Fecal Coliform	
PERMITS						
PERMIT	FACILITY	STREAM	RIVER MILE	LAT	LONG	WBID
VA0024101	Natural Bridge of Vi	Cedar Creek	1.91	373734	793237	VAV-I28R
VA0027944	Natural Bridge Juvenil	Elk Creek	2.63	373509	0793037	VAV-I28R
MONITORING STATIONS						
STREAM	NAME	RIVER MILE	RECORD	LAT	LONG	
Cedar Creek	2-CEC000.04	0.04	07/01/91	373634	0793235	
Elk Creek	2-ELK001.37	1.37	07/01/91	373604	0793016	
James River	2-JMS290.85	290.85	9/23/99	373656	792956	
PUBLIC WATER SUPPLY INTAKES						
OWNER	STREAM	RIVER MILE				
None						
WATER QUALITY MANAGEMENT PLANNING REGULATION						
Is this discharge addressed in the WQMP regulation? Yes						
If Yes, what effluent limitations or restrictions does the WQMP regulation impose on this discharge?						
PARAMETER	ALLOCATION					
BOD5	15.89 kg/d					
WATERSHED NAME						
VAV-I28R James River/Elk Creek/Cedar Creek						

Natural Bridge of Virginia - Water Quality Assessments Review April 18, 2012



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FLOW FREQUENCY DETERMINATION

MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE

4411 Early Road – P.O. Box 3000

Harrisonburg, VA 22801

SUBJECT: Flow Frequency Determination
Natural Bridge of Virginia – VPDES Permit No. VA0024101, Rockbridge County

TO: Permit Processing File

FROM: Eric Millard

DATE: April 24, 2012

This memo supersedes Keith Showman's flow frequency determination dated February 12, 2007.

Natural Bridge of Virginia discharges to Cedar Creek near Natural Bridge, VA. Stream flow frequencies are required at this site by the permit writer for the purpose of calculating effluent limitations for the VPDES permit.

The USGS conducted several flow measurements on South Buffalo Creek (#02024240) from 1982 to 1985. The measurements were made at the Route 611 bridge near Lexington, VA. The measurements correlated with the same day daily mean values from two continuous record gages: the Cowpasture River near Clifton Forge, VA (#02016000) and the Maury River near Buena Vista, VA (#02024000). The regression analysis showed a higher correlation between the measurements at South Buffalo Creek with the Maury River (Multiple R=0.79) than with the Cowpasture River (Multiple R=0.73). The measurements and daily mean values were plotted on a logarithmic graph and a best fit line was drawn through data points. The required flow frequencies from the reference gage were plugged into the equation and the associated flow frequencies for the measurement site were calculated.

The flow frequencies at the discharge point were determined by using the values at the measurement site and adjusting them by proportional drainage areas. The data for the reference gages, measurement site, and the discharge point are presented below. This analysis assumes there are no significant discharges, withdrawals or springs upstream of the discharge point.

Cowpasture River near Clifton Forge, VA (#02016000):

Drainage Area = 461 mi²

1Q30 =	47 cfs	High Flow 1Q10 =	82 cfs
1Q10 =	53 cfs	High Flow 7Q10 =	92 cfs
7Q10 =	56 cfs	High Flow 30Q10 =	124 cfs
30Q10 =	63 cfs	Harmonic Mean =	191 cfs
30Q5 =	69 cfs		

Maury River near Buena Vista, VA (#02024000):

Drainage Area = 647 mi²

1Q30 =	40 cfs	High Flow 1Q10 =	97 cfs
1Q10 =	53 cfs	High Flow 7Q10 =	107 cfs
7Q10 =	60 cfs	High Flow 30Q10 =	144 cfs
30Q10 =	68 cfs	Harmonic Mean =	239 cfs
30Q5 =	80 cfs		

South Buffalo Creek near Lexington, VA (#02024240):

Drainage Area = 21.2 mi²

1Q30 =	3.08 cfs	High Flow 1Q10 =	3.80 cfs
1Q10 =	3.29 cfs	High Flow 7Q10 =	3.89 cfs
7Q10 =	3.39 cfs	High Flow 30Q10 =	4.17 cfs
30Q10 =	3.49 cfs	Harmonic Mean =	4.70 cfs
30Q5 =	3.63 cfs		

Cedar Creek at Natural Bridge of Virginia discharge point:

Drainage Area = 15.3 mi²

1Q30 =	3.08 cfs	1.99 MGD	High Flow 1Q10 =	3.80 cfs	2.45 MGD
1Q10 =	3.29 cfs	2.13 MGD	High Flow 7Q10 =	3.89 cfs	2.51 MGD
7Q10 =	3.39 cfs	2.19 MGD	High Flow 30Q10 =	4.17 cfs	2.70 MGD
30Q10 =	3.49 cfs	2.26 MGD	Harmonic Mean =	4.70 cfs	3.04 MGD
30Q5 =	3.63 cfs	2.34 MGD			

The high flow months are December through May.

Reviewer: JRD 4/30/12

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EFFLUENT/STREAM MIXING EVALUATION

Mixing zone predictions were made with the Virginia DEQ Mixing Zone Analysis Version 2.1 program. The predictions are based on the discharge and receiving stream characteristics, and are presented below.

0.040 Annual Mix	0.040 Wet Mix
<p>Stream 7Q10 = 2.19 MGD Stream 30Q10 = 2.26 MGD Stream 1Q10 = 2.13 MGD Stream slope = 0.045 ft/ft Stream width = 15 ft Bottom scale = 4 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = .2575 ft Length = 511.16 ft Velocity = .8936 ft/sec Residence Time = .0066 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = .2624 ft Length = 503.01 ft Velocity = .9044 ft/sec Residence Time = .0064 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = .2533 ft Length = 518.47 ft Velocity = .884 ft/sec Residence Time = .1629 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.</p>	<p>Stream 7Q10 = 2.51 MGD Stream 30Q10 = 2.70 MGD Stream 1Q10 = 2.45 MGD Stream slope = 0.045 ft/ft Stream width = 20 ft Bottom scale = 4 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = .2339 ft Length = 991.77 ft Velocity = .8439 ft/sec Residence Time = .0136 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = .2441 ft Length = 956.69 ft Velocity = .8682 ft/sec Residence Time = .0128 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = .2304 ft Length = 1004.97 ft Velocity = .836 ft/sec Residence Time = .3339 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.</p>
0.099 MGD Annual Mix	0.099 MGD Wet Mix
<p>Stream 7Q10 = 2.19 MGD Stream 30Q10 = 2.26 MGD Stream 1Q10 = 2.13 MGD Stream slope = 0.045 ft/ft Stream width = 15 ft Bottom scale = 4 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = .2617 ft Length = 504.26 ft Velocity = .9027 ft/sec Residence Time = .0065 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = .2665 ft Length = 496.52 ft Velocity = .9135 ft/sec Residence Time = .0063 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = .2574 ft Length = 511.49 ft Velocity = .8934 ft/sec Residence Time = .159 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.</p>	<p>Stream 7Q10 = 2.51 MGD Stream 30Q10 = 2.70 MGD Stream 1Q10 = 2.45 MGD Stream slope = 0.045 ft/ft Stream width = 20 ft Bottom scale = 4 Channel scale = 1</p> <hr/> <p>Mixing Zone Predictions @ 7Q10 Depth = .2371 ft Length = 980.18 ft Velocity = .8515 ft/sec Residence Time = .0133 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 30Q10 Depth = .2474 ft Length = 945.38 ft Velocity = .8755 ft/sec Residence Time = .0125 days Recommendation: A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.</p> <hr/> <p>Mixing Zone Predictions @ 1Q10 Depth = .2338 ft Length = 991.98 ft Velocity = .8438 ft/sec Residence Time = .3266 hours Recommendation: A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.</p>

APPENDIX B

EFFLUENT SCREENING AND EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS

A comparison of technology and water quality-based limits was performed and the most stringent limits were selected, as summarized in the table below.

Outfall 001**Final Limits****Permitted Flow Tier: 0.040 MGD**

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		Continuous	TIRE
-----	-----	Monthly Average		Weekly Average		-----	-----
BOD ₅	2,5	30 mg/L	4.5 kg/d	45 mg/L	6.8 kg/d	1/Month	Grab
TSS	2	30 mg/L	4.5 kg/d	45 mg/L	6.8 kg/d	1/Month	Grab
Effluent Chlorine (TRC)(mg/L)*	3	0.20		0.22		1/Day	Grab
E. coli (N/100 mL) (geometric mean)	3	126		NA		4/Month 10 am to 4 pm	Grab
-----	-----	Minimum		Maximum		-----	-----
pH (S.U.)	2,3	6.0		9.0		1/Day	Grab
Dissolved Oxygen (mg/L)	4,5	6.0		NA		1/Day	Grab
Contact Chlorine (TRC)(mg/L)*	3	1.0		NA		1/Day	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

TIRE = Totalizing, Indicating, and Recording equipment

4/Month = 4 samples taken monthly, with at least 1 sample taken each calendar week

* = Applicable only when chlorination is used for disinfection

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9 VAC 25-31)
2. Federal Effluent Requirements (Secondary Treatment Regulation - 40CFR133)
3. Water Quality Standards (9 VAC 25-260)
4. Best Professional Judgment (BPJ)
5. Stream evaluation memorandum dated 10/30/91 & 11/4/91

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Outfall 001

Final Limits

Design Flow: 0.099 MGD

PARAMETER	BASIS FOR LIMITS	EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average		Maximum		Frequency	Sample Type
Flow (MGD)	1	NL		NL		Continuous	TIRE
-----	-----	Monthly Average		Weekly Average		-----	-----
BOD ₅	2,5	30 mg/L	11 kg/d	45 mg/L	17 kg/d	1/Week	4 HC
TSS	2	30 mg/L	11 kg/d	45 mg/L	17 kg/d	1/Month	4 HC
Effluent Chlorine (TRC)(mg/L)*	3	0.20		0.22		3/Day @ 4 hr intervals	Grab
E. coli (N/100 mL) (geometric mean)	3	126		NA		4/Month* or 2/Week** 10 am to 4 pm	Grab
-----	-----	Minimum		Maximum		-----	-----
pH (S.U.)	2,3	6.0		9.0		1/Day	Grab
Dissolved Oxygen (mg/L)	4,5	6.0		NA		1/Day	Grab
Contact Chlorine (TRC)(mg/L)*	3	1.0		NA		3/Day @ 4 hr intervals	Grab

NL = No Limitation, monitoring required

NA = Not Applicable

TIRE = Totalizing, Indicating, and Recording equipment

4 HC = 4-Hour Composite

4/Month = 4 samples taken monthly, with at least 1 sample taken each calendar week

* = Applicable only when chlorination is used for disinfection

** = Applicable if an alternative to chlorination is used for disinfection.

BASIS DESCRIPTIONS

1. VPDES Permit Regulation (9 VAC 25-31)
2. Federal Effluent Requirements (Secondary Treatment Regulation - 40CFR133)
3. Water Quality Standards (9 VAC 25-260)
4. Best Professional Judgment (BPJ)
5. Stream evaluation memorandum dated 10/30/91 & 11/4/91

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LIMITING FACTORS – OVERVIEW:

The following potential limiting factors have been considered in developing this permit and fact sheet:

Water Quality Management Plan Regulation (WQMP) (9 VAC 25-720)	
A. TMDL limits	None
B. Non-TMDL WLAs	BOD ₅
C. CBP (TN & TP) WLAs	None
Federal Effluent Guidelines	BOD ₅ , TSS, pH
BPJ/Agency Guidance limits	BOD ₅ , DO, TRC (contact)
Water Quality-based Limits - numeric	BOD ₅ , DO, TRC (effluent), E. coli, pH
Water Quality-based Limits - narrative	None
Technology-based Limits (9 VAC 25-40-70)	None
Whole Effluent Toxicity (WET)	None
Storm Water Limits	N/A

EVALUATION OF THE EFFLUENT – CONVENTIONAL POLLUTANTS:

As was done at the previous reissuance, the Regional Stream Model was not used to determine BOD₅ limits for this discharge because of the old power dam located downstream of the discharge point. The model is intended for use with free flowing streams and not for streams that are impounded below the discharge. The BOD₅ limits (based on secondary treatment limits) and DO limits in the previous permit and shown below for both flow tiers are considered to be protective to prevent violations of the DO standard, based on the stream evaluation memoranda dated October 30, 1991 and November 4, 1991 which are on file at DEQ and a flow frequency determination completed on April 24, 2012. The BOD₅ limits also comply with the WQMP WLA of 15.89 kg/day.

$$\text{BOD}_5 = 30 \text{ mg/L}$$

$$\text{DO} = 6.0 \text{ mg/L}$$

To address antidegradation for DO, BOD₅ loading will be limited to 11 kg/d and effluent DO will be maintained = 6.0 mg/L for any STP expansions discharging at Outfall 001.

The TSS limits reflect secondary treatment limits and have been carried forward from the previous permit for both flow tiers.

The pH limits reflect secondary treatment limits and the current WQS for pH in the receiving stream and have been carried forward from the previous permit for both flow tiers.

EVALUATION OF THE EFFLUENT – DISINFECTION:

Since the receiving stream is impaired for bacteria and a TMDL is being prepared, E. coli monitoring and limits have been included at this reissuance regardless of the disinfection method utilized. An E. coli limit with 4/Month monitoring is required at the 0.040 MGD flow tier regardless of the disinfection method utilized. An E. coli limit with 2/Week monitoring is required at the 0.099 MGD flow tier if the facility utilizes an alternative to chlorination for disinfection. An E. coli limit with 4/Month monitoring is required at the 0.099 MGD flow tier if chlorination is utilized for disinfection.

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EVALUATION OF THE EFFLUENT – NUTRIENTS:

The design average flow for the facility as it existed on or before July 1, 2005 was 0.099 MGD. The design of this treatment works did not take into consideration the need for nutrient removal.

The “permitted design capacity” or “permitted capacity” in terms of annual mass load of total nitrogen or total phosphorous discharged by this non-significant discharger is assumed to be that achieved at the current design flow using the currently installed technology.

Future nutrient limits may apply to the facility. For the sole purpose of establishing the current mass load of nutrients discharged from this facility, it is recognized that the design flow is 0.099 MGD (see above) and the technology installed for treating domestic sewage did not intentionally consider nutrient removal.

Pursuant to section 62.1-44.19:12-:19 of the law, Total Nitrogen (TN) and Total Phosphorous (TP) baselines are being established for this facility to represent nutrient discharge allowances as of July 1, 2005. Once established, these baselines will be used as a limiting factor should the facility ever expand or have a significant increase in effluent TN or TP concentrations. For municipal facilities, the baselines are based on the permitted design capacity of the facility. The permitted design capacity is defined as:

$$\text{Total N or P (lb/yr)} = \text{concentration (mg/L)} \times \text{design flow (mgd)} \times 8.3438 \times 365 \text{ (days/yr)}$$

where

Design flow – as of July 1, 2005, the approved flow was 0.099 MGD. Based on current guidance the flow used in these calculations is to be expressed to the nearest 0.001 MGD; therefore, 0.10 MGD has been used.

Concentration – the treatment provided as of July 1, 2005 was TN = 18.7 mg/L and TP = 2.5 mg/L (assumed concentrations based on secondary treatment facility)

$$\text{TN} = 18.7 \text{ mg/l} \times 0.099 \text{ MGD} \times 8.3438 \times 365 \text{ days/yr} = 5,638 \text{ lbs/yr}$$

$$\text{TP} = 2.5 \text{ mg/l} \times 0.099 \text{ MGD} \times 8.3438 \times 365 \text{ days/yr} = 753 \text{ lb/yr}$$

EVALUATION OF THE EFFLUENT – TOXICS:

Stream: At the previous reissuance water quality data for the receiving stream were obtained from Cedar Creek Ambient Monitoring Station No. 2CEC000.04. No new data are available from this station since 2001 so the previous values have been carried forward. A Flow Frequency Determination for the receiving stream was generated April 24, 2012, and is included in Appendix A. The “Wet Season” or “High Flow” months are December through May.

Stream Information			
90% Annual Temp (°C) =	24.3	90% pH (SU) =	8.7
90% Wet Temp (°C) =	17.9	10% pH (SU) =	7.7
Mean Hardness (mg/L) =	165		

All toxic pollutants, including Ammonia-N and TRC, are assumed absent in the receiving stream because there are no data for these parameters directly above the discharge.

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Discharge: The pH values for Natural Bridge of Virginia were obtained from the daily operational logs submitted with the Discharge Monitoring Reports (DMRs) by the permittee. Because effluent temperature data were not available, the effluent temperature and hardness values were carried forward from the previous permit

Effluent Information			
90% Annual Temp (°C) =	25	90% pH (SU) =	7.6
90% Wet Temp (°C) =	15	10% pH (SU) =	7.1
Mean Hardness (mg/L) =	262		

WQC and WLAs were calculated for the WQS parameters for which data are available. The resulting WQC and WLAs are presented in this appendix. Current agency guidelines recommends the evaluation of toxic pollutant limits for TRC and Ammonia-N be based on default effluent concentrations of 20 mg/L and 9 mg/L, respectively. The effluent data were analyzed per the protocol for evaluation of effluent toxic pollutants included in this appendix with the following results:

0.099 MGD Design Flow Tier:

- TRC: Because of new stream flow data, less stringent TRC limits were determined to be necessary at this reissuance. Because new stream flow information was available, the less stringent limits comply with antibacksliding requirements.
- Ammonia-N: No Ammonia-N limits were determined to be necessary at this reissuance.
- Additional monitoring data is needed for a number of pollutants due to the lack of effluent quality data. The permittee must monitor the effluent at Outfall 001 for the substances noted in Attachment A of the permit if three consecutive monthly average flows exceed 0.040 MGD prior to June 30, 2016.

0.040 MGD Design Flow Tier:

- TRC: Because the permit flow tier of 0.040 MGD was included in the permit only to allow reduced monitoring, the TRC limits determined for the 0.099 MGD design flow tier have been imposed at the lower permitted flow tier.
- Ammonia-N: Because limits were not determined to be necessary at the 0.099 MGD flow tier, limits are also not needed at the 0.040 MGD flow tier.

Fact Sheet – VPDES Permit No. VA0024101 – Natural Bridge of Virginia

WQC-WLA SPREADSHEET INPUT – 0.099 MGD

WATER QUALITY CRITERIA / WASTE LOAD ALLOCATION ANALYSIS					
Facility Name:		Natural Bridge of Virginia			
Receiving Stream:		Permit No.: VA0024101		Date: 4/30/2012	
Cedar Creek				Version: OWP Guidance Memo 00-2011 (8/24/00)	
Stream Information		Stream Flows		Mixing Information	
Mean Hardness (as CaCO ₃) =	165 mg/L	1Q10 (Annual) =	2.13 MGD	Annual - 1Q10 Flow =	100 %
90% Temperature (Annual) =	24.3 deg C	7Q10 (Annual) =	2.19 MGD	- 7Q10 Flow =	100 %
90% Temperature (Wet season) =	17.9 deg C	30Q10 (Annual) =	2.26 MGD	- 30Q10 Flow =	100 %
90% Maximum pH =	8.7 SU	1Q10 (Wet season) =	2.45 MGD	Wet Season - 1Q10 Flow =	100 %
10% Maximum pH =	7.7 SU	30Q10 (Wet season) =	2.7 MGD	- 30Q10 Flow =	100 %
Tier Designation =	2	30Q5 =	2.34 MGD		
Public Water Supply (PWS) Y/N? =	N	Harmonic Mean =	3.04 MGD		
V(alley) or P(iedmont)? =	V				
Trout Present Y/N? =	N				
Early Life Stages Present Y/N? =	Y				
Effluent Information					
Mean Hardness (as CaCO ₃) =	262 mg/L				
90% Temp (Annual) =	25 deg C				
90% Temp (Wet season) =	15 deg C				
90% Maximum pH =	7.6 SU				
10% Maximum pH =	7.1 SU				
1992 Discharge Flow =	0.099 MGD				
Discharge Flow for Limit Analysis =	0.099 MGD				
Footnotes: 1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise. 2. All flow values are expressed as Million Gallons per Day (MGD). 3. Discharge volumes are highest monthly average or 2C maximum for Industries and design flows for Municipals. 4. Hardness expressed as mg/l CaCO ₃ . Standards calculated using Hardness values in the range of 25-400 mg/l CaCO ₃ . 5. "Public Water Supply" protects for fish & water consumption. "Other Surface Waters" protects for fish consumption only. 6. Carcinogen "Y" indicates carcinogenic parameter. 7. Ammonia WQSs selected from separate tables, based on pH and temperature. 8. Metals measured as Dissolved, unless specified otherwise. 9. WLA = Waste Load Allocation (based on standards). 10. WLA = Waste Load Allocation (based on standards). 11. WLAs are based on mass balances (less background, if data exist). 12. Acute - 1 hour avg. concentration not to be exceeded more than 1/3 years. 13. Chronic - 4 day avg. concentration (30 day avg. for Ammonia) not to be exceeded more than 1/3 years. 14. Mass balances employ 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens. Actual flows employed are a function of the mixing analysis and may be less than the actual flows. 15. Effluent Limitations are calculated elsewhere using the minimum WLA and EPA's statistical approach (Technical Support Document).					

WQC-WLA SPREADSHEET OUTPUT – 0.099 MGD

Facility Name:	Permit No.:	WATER QUALITY CRITERIA				NON-ANTIDEGRADATION		
Natural Bridge of Virginia	VA0024101	0.099 MGD Discharge Flow - Mix per "Mixer"				WASTE LOAD ALLOCATIONS		
Receiving Stream:	Date:					0.099 MGD Discharge - Mix per "Mixer"		
Cedar Creek	4/25/2012							
Toxic Parameter and Form	Carcinogen?	Aquatic Protection		Human Health		Aquatic Protection		Human
		Acute	Chronic	Public Water Supplies	Other Surface Waters	Acute	Chronic	Health
Ammonia-N (Annual)	N	3.1E+00 mg/L	5.5E-01 mg/L	None	None	6.9E+01 mg/L	1.3E+01 mg/L	N/A
Ammonia-N (Wet Season)	N	3.0E+00 mg/L	8.1E-01 mg/L	None	None	7.7E+01 mg/L	2.3E+01 mg/L	N/A
Chlorine, Total Residual	N	1.9E-02 mg/L	1.1E-02 mg/L	None	None	4.3E-01 mg/L	3.9E-01 mg/L	N/A

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PROTOCOL FOR THE EVALUATION OF THE EFFLUENT – TOXIC POLLUTANTS

Toxic pollutants were evaluated in accordance with OWP Guidance Memo No. 00-2011. Acute and Chronic WLAs (WLA_a and WLA_c) were analyzed according to the protocol below using a statistical approach (STAT.exe) to determine the necessity and magnitude of limits. Human Health WLAs (WLA_{hh}) were analyzed according to the same protocol through a simple comparison with the effluent data. If the WLA_{hh} exceeded the effluent datum or data mean, no limits were required. If the effluent datum or data mean exceeded the WLA_{hh} , the WLA_{hh} was imposed as the limit. Since there are no data available immediately upstream of this discharge, all other upstream (background) pollutant concentrations are assumed to be "0".

The steps used in evaluating the effluent data are as follows:

- A. If all data are reported as "below detection" or $<$ the required Quantification Level (QL), and at least one detection level is $=$ the required QL, then the pollutant is considered to be not significantly present in the discharge and no further monitoring is required.
- B. If all data are reported as "below detection", and all detection levels are $>$ the required QL, then an evaluation is performed in which the pollutant is assumed present at the lowest reported detection level.
 - B.1. If the evaluation indicates that no limits are needed, then the existing data set is adequate and no further monitoring is required.
 - B.2. If the evaluation indicates that limits are needed, then the existing data set is inadequate to make a determination and additional monitoring is required.
- C. If any data value is reported as detectable at or above the required QL, then the data are adequate to determine whether effluent limits are needed.
 - C.1. If the evaluation indicates that no limits are needed, then no further monitoring is required.
 - C.2. If the evaluation indicates that limits are needed, then the limits and associated requirements are specified in the draft permit.
 - C.3. If the evaluation indicates that limits are needed, but the metals data are reported as a form other than "Dissolved", then the existing data set is inadequate to make a determination and additional monitoring is required.

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TOXLARGE – 0.099 MGD Flow Tier

Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
METALS					
Antimony, dissolved	7440-36-0	0.2	Previously evaluated, no further monitoring required.	---	---
Arsenic, dissolved	7440-38-2	1.0	Previously evaluated, no further monitoring required.	---	---
Barium, dissolved	7440-39-3	---	Applicable to PWS waters only	---	---
Cadmium, dissolved	7440-43-9	0.3	Previously evaluated, no further monitoring required.	---	---
Chromium III, dissolved	16065-83-1	0.5	Previously evaluated, no further monitoring required.	---	---
Chromium VI, dissolved	18540-29-9	0.5	Previously evaluated, no further monitoring required.	---	---
Chromium, Total	7440-47-3	---	Applicable to PWS waters only	---	---
Copper, dissolved	7440-50-8	0.5	Previously evaluated, no further monitoring required.	---	---
Iron, dissolved	7439-89-6	1.0	Applicable to PWS waters only	---	---
Lead, dissolved	7439-92-1	0.5	Previously evaluated, no further monitoring required.	---	---
Manganese, dissolved	7439-96-5	0.2	Applicable to PWS waters only	---	---
Mercury, dissolved	7439-97-6	1.0	Previously evaluated, no further monitoring required.	---	---
Nickel, dissolved	7440-02-0	0.5	Previously evaluated, no further monitoring required.	---	---
Selenium, total recoverable	7782-49-2	2.0	Previously evaluated, no further monitoring required.	---	---
Silver, dissolved	7440-22-4	0.2	Previously evaluated, no further monitoring required.	---	---
Thallium, dissolved	7440-28-0	---	No data available. Monitoring required.	---	---
Zinc, dissolved	7440-66-6	2.0	Previously evaluated, no further monitoring required.	---	---
PESTICIDES/PCBS					
Aldrin ^C	309-00-2	0.05	No data available. Monitoring required.	---	---
Chlordane ^C	57-74-9	0.2	No data available. Monitoring required.	---	---
Chlorpyrifos	2921-88-2	---	No data available. Monitoring required.	---	---
DDD ^C	72-54-8	0.1	No data available. Monitoring required.	---	---
DDE ^C	72-55-9	0.1	No data available. Monitoring required.	---	---
DDT ^C	50-29-3	0.1	No data available. Monitoring required.	---	---
Demeton	8065-48-3	---	No data available. Monitoring required.	---	---
Diazinon	333-41-5	---	No data available. Monitoring required.	---	---
2,4-Dichlorophenoxy acetic acid (synonym = 2,4-D)	94-75-7	---	Applicable to PWS waters only	---	---
Dieldrin ^C	60-57-1	0.1	No data available. Monitoring required.	---	---
Alpha-Endosulfan	959-98-8	0.1	No data available. Monitoring required.	---	---
Beta-Endosulfan	33213-65-9	0.1	No data available. Monitoring required.	---	---
Alpha-Endosulfan + Beta-Endosulfan		---	No data available. Monitoring required.	---	---
Endosulfan Sulfate	1031-07-8	0.1	No data available. Monitoring required.	---	---
Endrin	72-20-8	0.1	No data available. Monitoring required.	---	---
Endrin Aldehyde	7421-93-4	---	No data available. Monitoring required.	---	---
Guthion	86-50-0	---	No data available. Monitoring required.	---	---
Heptachlor ^C	76-44-8	0.05	No data available. Monitoring required.	---	---
Heptachlor Epoxide ^C	1024-57-3	---	No data available. Monitoring required.	---	---
Hexachlorocyclohexane Alpha-BHC ^C	319-84-6	---	No data available. Monitoring required.	---	---
Hexachlorocyclohexane Beta-BHC ^C	319-85-7	---	No data available. Monitoring required.	---	---
Hexachlorocyclohexane Gamma-BHC (synonym = Lindane)	58-89-9	---	No data available. Monitoring required.	---	---

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
Kepone	143-50-0	---	No data available. Monitoring required.	---	---
Malathion	121-75-5	---	No data available. Monitoring required.	---	---
Methoxychlor	72-43-5	---	No data available. Monitoring required.	---	---
Mirex	2385-85-5	---	No data available. Monitoring required.	---	---
Parathion	56-38-2	---	No data available. Monitoring required.	---	---
PCB Total ^C	1336-36-3	7.0	No data available. Monitoring required.	---	---
Toxaphene ^C	8001-35-2	5.0	No data available. Monitoring required.	---	---
2-(2,4,5-Trichlorophenoxy) propionic acid (synonym = Silvex)	93-72-1	---	Applicable to PWS waters only	---	---
Tributyltin	60-10-5	---	No data available. Monitoring required.	---	---
BASE NEUTRAL EXTRACTABLES					
Acenaphthene	83-32-9	10.0	No data available. Monitoring required.	---	---
Anthracene	120-12-7	10.0	No data available. Monitoring required.	---	---
Benidine ^C	92-87-5	---	No data available. Monitoring required.	---	---
Benzo (a) anthracene ^C	56-55-3	10.0	No data available. Monitoring required.	---	---
Benzo (b) fluoranthene ^C	205-99-2	10.0	No data available. Monitoring required.	---	---
Benzo (k) fluoranthene ^C	207-08-9	10.0	No data available. Monitoring required.	---	---
Benzo (a) pyrene ^C	50-32-8	10.0	No data available. Monitoring required.	---	---
Bis 2-Chloroethyl Ether ^C	111-44-4	---	No data available. Monitoring required.	---	---
Bis 2-Chloroisopropyl Ether	108-60-1	---	No data available. Monitoring required.	---	---
Bis-2-Ethylhexyl Phthalate ^C	117-81-7	10.0	No data available. Monitoring required.	---	---
Butyl benzyl phthalat e	85-68-7	10.0	No data available. Monitoring required.	---	---
2-Chloronaphthalene	91-58-7	---	No data available. Monitoring required.	---	---
Chrysene ^C	218-01-9	10.0	No data available. Monitoring required.	---	---
Dibenz(a,h)anthracene ^C	53-70-3	20.0	No data available. Monitoring required.	---	---
1,2-Dichlorobenzene	95-50-1	10.0	No data available. Monitoring required.	---	---
1,3-Dichlorobenzene	541-73-1	10.0	No data available. Monitoring required.	---	---
1,4-Dichlorobenzene	106-46-7	10.0	No data available. Monitoring required.	---	---
3,3-Dichlorobenzidine ^C	91-94-1	---	No data available. Monitoring required.	---	---
Diethyl phthalate	84-66-2	10.0	No data available. Monitoring required.	---	---
Dimethyl phthalate	131-11-3	---	No data available. Monitoring required.	---	---
Di-n-Butyl Phthalate	84-74-2	10.0	No data available. Monitoring required.	---	---
2,4-Dinitrotoluene	121-14-2	10.0	No data available. Monitoring required.	---	---
1,2-Diphenylhydrazine ^C	122-66-7	---	No data available. Monitoring required.	---	---
Fluoranthene	206-44-0	10.0	No data available. Monitoring required.	---	---
Fluorene	86-73-7	10.0	No data available. Monitoring required.	---	---
Hexachlorobenzene ^C	118-74-1	---	No data available. Monitoring required.	---	---
Hexachlorobutadiene ^C	87-68-3	---	No data available. Monitoring required.	---	---
Hexachlorocyclopentadiene	77-47-4	---	No data available. Monitoring required.	---	---
Hexachloroethane ^C	67-72-1	---	No data available. Monitoring required.	---	---
Indeno(1,2,3-cd)pyrene ^C	193-39-5	20.0	No data available. Monitoring required.	---	---
Isophorone ^C	78-59-1	10.0	No data available. Monitoring required.	---	---
Nitrobenzene	98-95-3	10.0	No data available. Monitoring required.	---	---
N-Nitrosodimethylamine ^C	62-75-9	---	No data available. Monitoring required.	---	---

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
N-Nitrosodi-n-propylamine ^C	621-64-7	---	No data available. Monitoring required.	---	---
N-Nitrosodiphenylamine ^C	86-30-6	---	No data available. Monitoring required.	---	---
Pyrene	129-00-0	10.0	No data available. Monitoring required.	---	---
1,2,4-Trichlorobenzene	120-82-1	10.0	No data available. Monitoring required.	---	---
VOLATILES					
Acrolein	107-02-8	---	No data available. Monitoring required.	---	---
Acrylonitrile ^C	107-13-1	---	No data available. Monitoring required.	---	---
Benzene ^C	71-43-2	10.0	No data available. Monitoring required.	---	---
Bromoform ^C	75-25-2	10.0	No data available. Monitoring required.	---	---
Carbon Tetrachloride ^C	56-23-5	10.0	No data available. Monitoring required.	---	---
Chlorobenzene	108-90-7	50.0	No data available. Monitoring required.	---	---
Chlorodibromomethane ^C	124-48-1	10.0	No data available. Monitoring required.	---	---
Chloroform	67-66-3	10.0	No data available. Monitoring required.	---	---
Dichlorobromomethane ^C	75-27-4	10.0	No data available. Monitoring required.	---	---
1,2-Dichloroethane ^C	107-06-2	10.0	No data available. Monitoring required.	---	---
1,1-Dichloroethylene	75-35-4	10.0	No data available. Monitoring required.	---	---
1,2-trans-dichloroethylene	156-60-5	---	No data available. Monitoring required.	---	---
1,2-Dichloropropane ^C	78-87-5	---	No data available. Monitoring required.	---	---
1,3-Dichloropropene ^C	542-75-6	---	No data available. Monitoring required.	---	---
Ethylbenzene	100-41-4	10.0	No data available. Monitoring required.	---	---
Methyl Bromide	74-83-9	---	No data available. Monitoring required.	---	---
Methylene Chloride ^C	75-09-2	20.0	No data available. Monitoring required.	---	---
1,1,2,2-Tetrachloroethane ^C	79-34-5	---	No data available. Monitoring required.	---	---
Tetrachloroethylene	127-18-4	10.0	No data available. Monitoring required.	---	---
Toluene	10-88-3	10.0	No data available. Monitoring required.	---	---
1,1,2-Trichloroethane ^C	79-00-5	---	No data available. Monitoring required.	---	---
Trichloroethylene ^C	79-01-6	10.0	No data available. Monitoring required.	---	---
Vinyl Chloride ^C	75-01-4	10.0	No data available. Monitoring required.	---	---
RADIONUCLIDES					
Beta Particle & Photon Activity (mrem/yr)	N/A	---	Applicable to PWS waters only	---	---
Combined Radium 226 and 228 (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Gross Alpha Particle Activity (pCi/L)	N/A	---	Applicable to PWS waters only	---	---
Uranium	N/A	---	Applicable to PWS waters only	---	---
ACID EXTRACTABLES					
2-Chlorophenol	95-57-8	10.0	No data available. Monitoring required.	---	---
2,4-Dichlorophenol	120-83-2	10.0	No data available. Monitoring required.	---	---
2,4-Dimethylphenol	105-67-9	10.0	No data available. Monitoring required.	---	---
2,4-Dinitrophenol	51-28-5	---	No data available. Monitoring required.	---	---
2-Methyl-4,6-Dinitrophenol	534-52-1	---	No data available. Monitoring required.	---	---
Nonylphenol	104-40-51	---	No data available. Monitoring required.	---	---
Pentachlorophenol ^C	87-86-5	50.0	No data available. Monitoring required.	---	---
Phenol	108-95-2	10.0	No data available. Monitoring required.	---	---
2,4,6-Trichlorophenol ^C	88-06-2	10.0	No data available. Monitoring required.	---	---

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Parameter	CASRN	QL (ug/L)	Data (ug/L unless noted otherwise)	Source of Data	Data Eval
MISCELLANEOUS					
Ammonia-N (mg/L)	766-41-7	0.2 mg/L	Default = 9 mg/L	a	C.1
Chloride (mg/L)	16887-00-6	---	No data available. Monitoring required.	---	---
TRC (mg/L)	7782-50-5	0.1 mg/L	Default = 20 mg/L	a	C.2
Cyanide, Free	57-12-5	10.0	No data available. Monitoring required.	---	---
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin)	1746-01-6	0.01	Applicable to Paper Mills & Oil Refineries only	---	---
Foaming Agents (as MBAS)	N/A	---	Applicable to PWS waters only	---	---
Hydrogen Sulfide	7783-06-4	---	No data available. Monitoring required.	---	---
Nitrate as N (mg/L)	14797-55-8	---	Applicable to PWS waters only	---	---
Sulfate (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Total Dissolved Solids (mg/L)	N/A	---	Applicable to PWS waters only	---	---
Hardness (mg/L as CaCO ₃)	471-34-1	---	No data available. Monitoring required.	---	---

"Type" column indicates a category assigned to the referenced substance (see below):

A = Acid Extractable Organic Compounds
 B = Base/Neutral Extractable Organic Compounds
 M = Metals
 p = PCBs
 P = Pesticides
 R = Radionuclides
 V = Volatile Organic Compounds
 X = Miscellaneous Compounds and Parameters

The **superscript "C"** following the parameter name indicates that the substance is a known or suspected carcinogen; human health criteria at risk level 10⁻⁵.

"Source of Data" codes:

a = default effluent concentration

"Data Evaluation" codes:

See section titled PROTOCOL FOR THE EVALUATION OF EFFLUENT TOXIC POLLUTANTS for an explanation of the code used.

CASRN = Chemical Abstract Service Registry Number for each parameter is referenced in the current Water Quality Standards. A unique numeric identifier designating only one substance. The Chemical Abstract Service is a division of the American Chemical Society.

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STAT.EXE RESULTS – 0.099MGD Flow Tier:

<p><u>Ammonia-N (annual)</u> Chronic averaging period = 30 WLAa = 69 WLAc = 13 Q.L. = 0.2 # samples/mo. = 4 # samples/wk. = 1</p> <p>Summary of Statistics: # observations = 1 Expected Value = 9 Variance = 29.16 C.V. = 0.6 97th percentile daily values = 21.9007 97th percentile 4 day average = 14.9741 97th percentile 30 day average= 10.8544 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>No Limit is required for this material</p> <p>The data are: 9</p>	<p><u>TRC</u> Chronic averaging period = 4 WLAa = 0.43 WLAc = 0.39 Q.L. = 0.1 # samples/mo. = 90 # samples/wk. = 21</p> <p>Summary of Statistics: # observations = 1 Expected Value = 20 Variance = 144 C.V. = 0.6 97th percentile daily values = 48.6683 97th percentile 4 day average = 33.2758 97th percentile 30 day average= 24.1210 # < Q.L. = 0 Model used = BPJ Assumptions, type 2 data</p> <p>A limit is needed based on Acute Toxicity Maximum Daily Limit = 0.43 Average Weekly Limit = 0.223905631151805 Average Monthly Limit = 0.197728049448042</p> <p>The data are: 20</p>
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APPENDIX C

BASES FOR PERMIT SPECIAL CONDITIONS

Tabulated below are the sections of the permit, with any changes and the reasons for the changes identified. Also provided is the basis for each of the permit special conditions.

Cover Page	<ul style="list-style-type: none">• Content and format as prescribed by the VPDES Permit Manual.
Part I.A.1.	<p>Effluent Limitations and Monitoring Requirements: <i>Updates Part I.A.1. of the previous permit with the following:</i></p> <ul style="list-style-type: none">• Changes were made to the format and introductory language.• E. coli monitoring and limit were added.• A less stringent monthly and weekly average TRC limit was included.• Footnotes were updated to reflect current DEQ guidance and changes in the reissued permit.
Part I.A.2.	<p>Effluent Limitations and Monitoring Requirements: <i>Updates Part I.A.2. of the previous permit with the following:</i></p> <ul style="list-style-type: none">• Changes were made to the format and introductory language• E. coli monitoring and limit were added.• A less stringent monthly and weekly average TRC limit was included.• Footnotes were updated to reflect current DEQ guidance and changes in the reissued permit.
Part I.B.	<p>Additional TRC And E. coli Limitations and Monitoring Requirements: <i>Updates Part I.B. of the previous permit.</i> Required by Sewage Collection and Treatment (SCAT) Regulations and 9 VAC 25-260-170, Bacteria; other waters. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.</p>
Part I.C.	<p>Effluent Limitations and Monitoring Requirements – Additional Instructions: <i>Updates Part I.C. of the previous permit.</i> Authorized by VPDES Permit Regulation, 9 VAC 25-31-190.J.4 and 220.I. This condition is necessary when a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.</p>
Part I.D.1.	<p>95% Capacity Reopener: <i>Identical to Part I.D.1. of the previous permit.</i> Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 4 for certain permits.</p>
Part I.D.2.	<p>Materials Handling/Storage: <i>Identical to Part I.D.2. of the previous permit.</i> 9 VAC 25-31-280.B.2. requires that the types and quantities of “wastes, fluids, or pollutants which are ... treated, stored, etc.” be addressed for all permitted facilities.</p>
Part I.D.3.	<p>O&M Manual Requirement: <i>Updates Part I.D.3. of the previous permit.</i> Required by Code of Virginia 62.1-44.19, SCAT Regulations 9 VAC 25-790, and VPDES Permit Regulation 9 VAC 25-31-190 E for all STPs.</p>
Part I.D.4.	<p>CTC/CTO Requirement: <i>Identical to Part I.D.4. of the previous permit.</i> Required by Code of Virginia 62.1-44.19, SCAT Regulations 9 VAC 25-790, and VPDES Permit Regulation 9 VAC 25-31-190 E for all STPs.</p>
Part I.D.5.	<p>SMP Requirement: <i>Updates Part I.D.6. of the previous permit.</i> VPDES Permit Regulation 9 VAC 25-31-100 P, 220 B 2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements are derived from the Virginia Pollution Abatement Permit Regulation (9 VAC 25-32-10 <i>et seq.</i>)</p>

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- Part I.D.6. **Licensed Operator Requirement:** *Identical to Part I.D.7. of the previous permit.* The VPDES Permit Regulation 9 VAC 25-31-200 C, the Code of Virginia 54.1-2300 et seq., and Rules and Regulations for Waterworks and Wastewater Works Operators 18 VAC 160-20-10 et seq., require licensure of operators.
- Part I.D.7. **Reliability Class:** *Updates Part I.D.8. of the previous permit.* Required by SCAT Regulations 9 VAC 25-790. Class II status was assigned to the facility.
- Part I.D.8. **Water Quality Criteria Monitoring:** *Updates Part I.D.10. of the previous permit.* State Water Control Law at 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit.
- Part I.D.9. **Treatment Works Closure Plan:** *Updates Part I.D.9. of the previous permit.* Required for all STPs per the State Water Control Law at 62.1-44.18.C. and 62.1-44.15:1.1., and the SCAT Regulations at 9 VAC 25-790-450.E.. and 9 VAC 25-790-120.E.3.
- Part I.D.10. **Reopeners:**
- a. *Updates Part I.D.12. of the previous permit:* Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.
 - b. *New Requirement:* 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.
 - c. *Updates Part I.D.11. of the previous permit:* 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.
 - d. *Updates Part D.5. of the previous permit:* Required by the VPDES Permit Regulation, 9 VAC 25-31-220.C, for all permits issued to STPs.
- Part II **Conditions Applicable to All VPDES Permits:** *Identical to Part II of previous permit.* VPDES Permit Regulation 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed. Part II.A.4. language added for Virginia Environmental Laboratory Accreditation Program (VELAP) per 1 VAC 30, Chapter 45: Certification for Noncommercial Environmental Laboratories, and 1 VAC 30, Chapter 46: Accreditation for Commercial Laboratories.

Public Notice – Environmental Permit

Purpose of notice: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the continued release of treated wastewater into a water body in Rockbridge County, Virginia.

First Public Notice Issue Date: **(to be supplied by newspaper)**

Public comment period: 30 days following first public notice issue date

Permit name AND NUMBER: Virginia Pollutant Discharge Elimination System Permit – Wastewater VA0024101 issued by DEQ, under the authority of the State Water Control Board

Name AND address of applicant: Natural Bridge of Virginia

Name and address of facility: Natural Bridge of Virginia; PO Box 57, Natural Bridge, VA 24578

Project description: Natural Bridge of Virginia has applied for reissuance of the referenced permit. The applicant proposes to release treated sewage wastewater at a rate of 0.099 million gallons per day into Cedar Creek in Rockbridge County in the James River/Elk Creek/Cedar Creek watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: organic matter, solids, chlorine, bacteria, dissolved oxygen, and pH. Sludge from the treatment process will be hauled to the Lexington-Rockbridge Regional WQCF for disposal.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

Contact for public comments, document requests and additional information:

Name: Kate B. Harrigan

Address: Valley Regional Office, 4411 Early Road, P.O. Box 3000, Harrisonburg, Virginia, 22801

Phone: (540) 574-7850 E-mail: kathleen.harrigan@deq.virginia.gov Fax: (540) 574-7878

The public may review the draft permit and application at the DEQ office named above.